



Aptio Automation

Technical Specifications

siemens-healthineers.com

Automation
Partner



Start Planning Your Transformation to Increased Productivity

Bring proven experience and efficiency to total laboratory automation. Aptio® Automation combines Siemens Healthineers workflow expertise with intelligent technologies in flexible, track-based solutions designed to drive laboratory productivity for years to come. By providing a full complement of pre- and post-analytical sample-processing modules along with comprehensive analytics, Aptio Automation is designed to address the needs of medium- to very-high-volume laboratories.

Please consult your local representative for a list of all Siemens Healthineers and third-party intra-analytical instruments that can be connected to Aptio Automation.*

Needs-based flexibility that includes open connectivity

For more than two decades, Siemens Healthineers has successfully designed track-based automation solutions that effectively combine clinical disciplines, test methodologies, and analyzer capacities using our portfolio alone. We continue to offer an extensive diagnostics portfolio to meet your multidisciplinary testing and workload requirements for on-track chemistry, immunoassay, hematology, hemostasis, and plasma protein testing. Designed to be automation-ready, our instruments also allow direct front-loading of urgent and low-volume samples to meet your most critical deadlines.

By collaborating with Inpeco, a leader in clinical laboratory automation, we are now able to also promote an expanding range of diagnostic analyzers from other manufacturers* to address specialty testing

needs. Please consult your local Siemens Healthineers representative for a current list of instruments and connectivity interfaces available for Aptio Automation in your area.

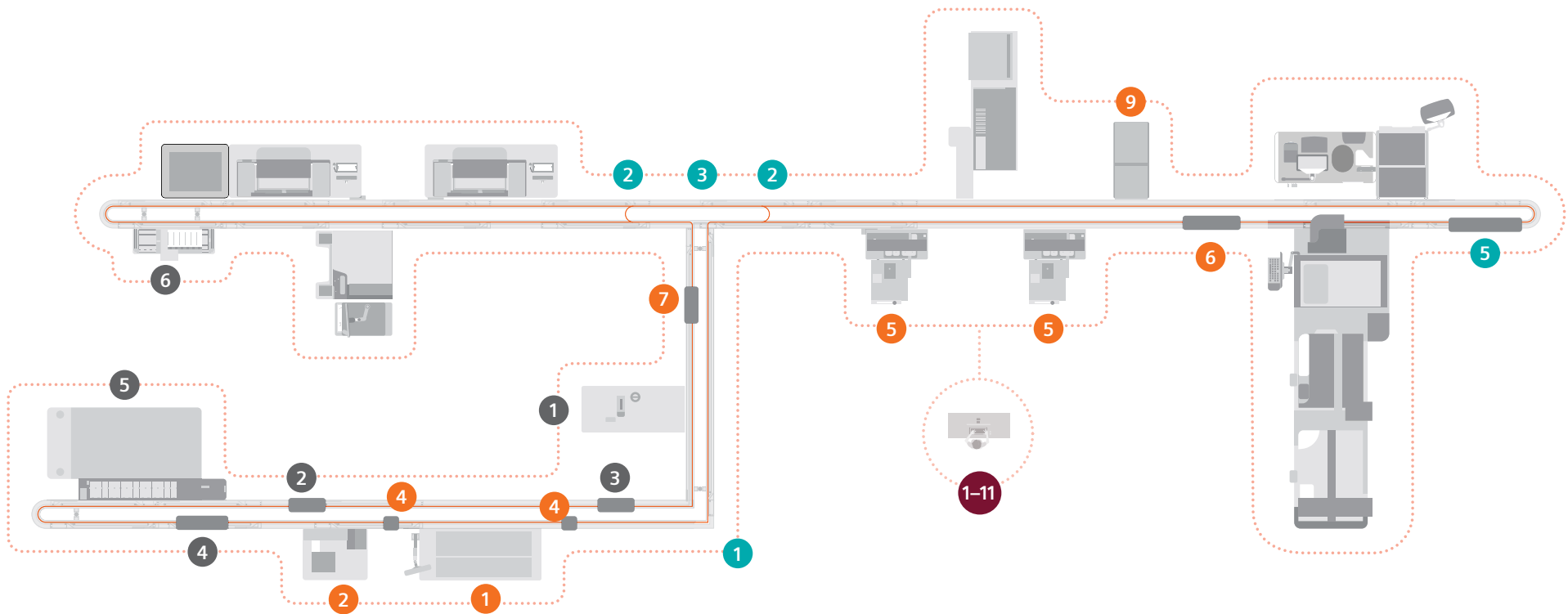
Technical specifications associated with Siemens Healthineers portfolio of automation-ready, multidisciplinary instruments are published separately. Consult third-party manufacturers and/or vendors for technical specifications associated with non-Siemens Healthineers instrumentation.

End-to-end project management

Siemens Healthineers has successfully delivered multidisciplinary, track-based total laboratory automation solutions to customers in more than 50 countries since 1998. From start to finish, your automation project will be managed by a Siemens Healthineers project manager.

The process begins with a workflow analysis guided by our consultants experienced in Lean and Six Sigma practices to determine the specific system requirements based on laboratory needs. Your Aptio Automation configuration will be designed and validated by Siemens Healthineers before being custom-manufactured by Inpeco. Each component is tested prior to installation by your Siemens Healthineers implementation team, and the overall solution's functionality and performance is verified prior to analytical production. And we are committed to ongoing health checks to maintain or improve the solution's efficiency in years to come.

*Connectivity to third-party analyzers may not be available in all countries. Analyzer availability may vary by country, and connectivity will require manufacturer agreement. Please contact your local Siemens Healthineers representative for further information.



Pre-analytical Modules

Choose the modules that make sense for your laboratory's workload, including multiples of individual components.

- | | |
|----------------------------------|------------------------------------|
| 1. Input/Output Module | 6. Decapper Module |
| 2. Bulk Input Module† | 7. Sample Volume Detection Module |
| 3. Rack Input Module (not shown) | 8. Sample Mixer Module (not shown) |
| 4. Tube Inspection Module‡ | 9. Wide Belt Buffer Module |
| 5. Centrifuge Module | |

†Automated tube feed options available.
‡If selected, a Tube Inspection Module will be required for each Input Module on the track.

Post-analytical Modules

Eliminate labor-intensive, time-consuming work when distributing, storing, and/or disposing of samples.

- | | |
|--------------------------|--|
| 1. Aliquotter Module | 5. Storage Retrieval and Disposal Module |
| 2. Aliquot Capper Module | 6. Rack Output Module |
| 3. Sealer Module | 7. High-capacity Waste System§ |
| 4. Desealer Module | (not shown) |

§Under development. Not available for sale. Future availability is not guaranteed.

Flexible Track Design Options

Customize a configuration to help maximize your use of space and staff.

- | | |
|---------------------------------|--|
| 1. Track L (right or left turn) | 4. Automation Module Divert Lane (not shown) |
| 2. Track U-Turn | 5. Generic Slot |
| 3. Track T Intersection | |

Integrated Sample-management Software

Apply patient-centric rules to automate workflows for increased productivity and consistent quality.

- | | |
|---|-------------------------------|
| 1. Intelligent Routing: Test Prioritization, Tube Type, Sorting, Disposal | 6. One-click Sample Retrieval |
| 2. STAT Prioritization | 7. Autoverification** |
| 3. Reflex Testing Criteria | 8. Algorithm-driven Testing** |
| 4. Integrated QC Management** | 9. Exception Management |
| 5. Add-on Test Management | 10. Instrument Status |
| | 11. Module Status, and More |

**Some advanced functionality may be subject to LIS capabilities or will require Atellica® Data Manager. Labs can also choose to incorporate Atellica® Process Manager to further expand their process-management capabilities.

Aptio Automation Module Specifications

Pre-analytical Modules



Input/Output Module
Routine and STAT tube input, output, sort, and priority output

Weight: 307 kg (677 lb)
Dimensions (mm): 2340 L x 1515 H x 775 D
Power Consumption: 650 VA
Max. Capacity: 780 tubes, 15 racks, 48 positions (routine input, output, and sort); 5 racks, 12 positions (STAT input and priority output)
Throughput (tubes/hour): Up to 750 tubes during simultaneous input and output



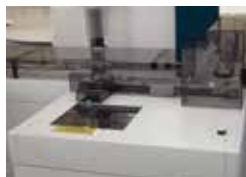
Centrifuge Module

Weight: 420 kg (926 lb)
Dimensions (mm): 945 L x 1510 H x 1155 D
Power Consumption: 2950 VA
Max. Capacity: 80 tubes
Throughput (tubes/hour): Up to 300 with 10-min spin



Wide Belt Buffer Module (240)
Sample/sample carrier buffer for managing workload peaks and valleys

Weight: 85 kg (188 lb)
Dimensions (mm): 535 L x 1045 H x 1200 D
Power Consumption: 300 VA
Max. Capacity: 240 tubes



Bulk Input Module
High-speed tube input by bulk tube load

Weight: 153 kg (338 lb)
Dimensions (mm): 985 L x 1235 H x 790 D
Power Consumption: 160 VA
Max. Capacity: 700 tubes
Throughput (tubes/hour): Up to 1000



Decapper Module (external)

Weight: 69 kg (153 lb)
Dimensions (mm): 455 L x 1240 H x 135 D
Power Consumption: 250 VA
Max. Capacity: 2000 waste caps
Throughput (tubes/hour): Up to 800



Wide Belt Buffer Module (600)
Sample/sample carrier buffer for managing workload peaks and valleys

Weight: 130 kg (287 lb)
Dimensions (mm): 1230 L x 1045 H x 1075 D
Power Consumption: 300 VA
Max. Capacity: 600 tubes



Rack Input Module
High-speed tube input by rack

Weight: 110 kg (243 lb)
Dimensions (mm): 1225 L x 1260 H x 510 D
Power Consumption: 950 VA
Max. Capacity: 288 tubes
Throughput (tubes/hour): Up to 800



Sample Volume Detection Module

Weight: N/A
Dimensions (mm): Incorporated module
Power Consumption: 560 VA
Max. Capacity: N/A
Throughput (tubes/hour): Up to 500



Tube Inspection Module
Detects and manages mismatches between tube type and test request

Weight: 11 kg (25 lb)
Dimensions (mm): Incorporated module
Power Consumption: 150 VA
Throughput (tubes/hour): Up to 1000



Sample Mixer Module

Weight: 50 kg (110 lb)
Dimensions (mm): Incorporated module
Power Consumption: 625 VA
Max. Capacity: Four tubes
Throughput (tubes/hour): Up to 700^{††}

Note: Weight has been measured for all modules with samples or consumables. Some modules are incorporated into the track, and weight may vary by configuration. Maximum physical dimensions have been determined from a combination of 2-D drawings (length and width) and by measuring the actual height. Throughput claims have been obtained during testing, under optimal conditions.

Post-analytical Modules



Aliquoter Module

Weight: 209 kg (461 lb)
Dimensions (mm): 705 L x 1475 H x 1590 D
Power Consumption: 500 VA
Max. Capacity: Four secondary tubes per primary tube
Throughput (tubes/hour): Up to 400^{††}



Aliquot Capper Module (external)

Screw-type recapper for daughter aliquot tubes

Weight: 60 kg (133 lb)
Dimensions (mm): 805 L x 1235 H x 215 D
Power Consumption: 60 VA
Max. Capacity: 1000 caps
Throughput (tubes/hour): Up to 400



Sealer Module (external)

(mandatory with RSM)

Weight: 54 kg (119 lb)
Dimensions (mm): 860 L x 1270 H x 135 D
Power Consumption: 180 VA
Max. Capacity: 16,000 or 19,000 seals/cartridge
Throughput (tubes/hour): Up to 800



Desealer Module (external)

Automatic tube desealing for rerun, reflex, and add-on testing

Weight: 71 kg (157 lb)
Dimensions (mm): 510 L x 1100 H x 120 D
Power Consumption: 60 VA
Max. Capacity: 10,000 seals
Throughput (tubes/hour): Up to 200



Refrigerated Storage Module (15,000)

Automatic storage, retrieval, and disposal of sealed tubes

Weight: 1410 kg (3109 lb)
Dimensions (mm): 2460 L x 2485 H^{§§} x 1405 D
Power Consumption: 3250 VA
Max. Capacity: 15,360 tubes
Throughput (tubes/hour): Up to 800



Refrigerated Storage Module (9000)

Automatic storage, retrieval, and disposal of sealed tubes

Weight: 1082 kg (2386 lb)
Dimensions (mm): 2460 L x 2175 H^{§§} x 1405 D
Power Consumption: 3250 VA
Max. Capacity: 9216 tubes
Throughput (tubes/hour): Up to 800

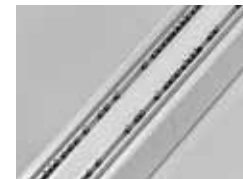


Rack Output Module

High-speed tube output by rack

Weight: 110 kg (243 lb)
Dimensions (mm): 1225 L x 1260 H x 510 D
Power Consumption: 950 VA
Max. Capacity: 288 tubes
Throughput (tubes/hour): Up to 800

Flexible Track Design Options



Track

Weight: 44 kg (97 lb) per meter
Dimensions (mm): Variable
Power Consumption: Variable
Throughput (tubes/hour): Up to 3600



Track L-Turn

(Right or left turn)

Weight: 100 kg (221 lb)
Dimensions (mm): 856 L x 1045 H x 875 D
Power Consumption: 200 VA



Track U-Turn

Provides shortcuts for improved workflow

Weight: 42 kg (93 lb)
Dimensions (mm): Incorporated module
Power Consumption: 50 VA



Track T-Intersection

Enables spur configurations

Weight: 74 kg (164 lb)
Dimensions (mm): 975 L x 1045 H x 350 D
Power Consumption: 100 VA



Automation Module Divert Lane

Prevents congestion of samples that do not require module management

Weight: Variable
Dimensions (mm): 1000–2300 L



Track Head

Weight: 18 kg (40 lb)
Dimensions (mm): 430 L x 885 H x 196 D
Power Consumption: 100 VA

^{††}Throughput based on four cycles with wait time for UP position set at 300 ms.

^{‡‡}Based on 80 primary tubes, 4 secondary tubes per primary tube, dispensing 200 µL in each secondary tube. Secondary tube: 93 * 13 mm, 3 mL max. fill.

^{§§}An additional space of 300 mm must be allowed for service clearance.

Aptio Automation

Built-in IT Components

IT specifications

Operating system

Red Hat Enterprise Linux for data-management system and WINDOWS Server 2012 for sample-management system

Hardware

Dell server with hardware RAID controller in one of four sizes (see table). The server's RAID disk controller must be a hardware controller, not a software controller. Do not install data-management software on a server equipped with anything other than a hardware RAID controller.

Firewall

Cisco 819 Integrated Service Router in hardened factor form

Serial device server

Moxa NPORT 5110 (serial-to-Ethernet converter, one device for each instrument serial port to be configured as communication channel)

Server details***

Product Features	From 1 to 14 Analyzers	From 15 to 20 Analyzers	From 21 to 30 Analyzers
Type	Rack	Rack	Rack
Manufacturer	Dell	Dell	Dell
Model	OEM POWEREDGE R640 XL	OEM POWEREDGE R640 XL	OEM POWEREDGE R640 XL
Processor	INTEL XEON Silver 4110 8 Core @ 2.1 GHz	INTEL XEON Silver 4110 8 Core @ 2.1 GHz	INTEL XEON Silver 4116 12 Core @ 2.1 GHz
Number of Processors	1	2	2
Memory	64 GB DDR4	96 GB DDR4	128 GB DDR4
Internal Storage	6 x 300 GB SAS HDDs	8 x 300 GB SAS HDDs	8 x 600 GB SAS HDDs
Network Interfaces	4 x 1 Gigabit Ethernet Ports	4 x 1 Gigabit Ethernet Ports	4 x 1 Gigabit Ethernet Ports
RAID Controller	HW RAID 2 GB NV Cache (RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60)	HW RAID 2 GB NV Cache (RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60)	HW RAID 2 GB NV Cache (RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60)
Power Supply	Dual Redundant 495 W	Dual Redundant 495 W	Dual Redundant 495 W
Optical Drive	DVD-ROM SATA	DVD-ROM SATA	DVD-ROM SATA
Ports	USB (2 Front, 2 Rear, 1 Internal), 1 Serial and Video	USB (2 Front, 2 Rear, 1 Internal), 1 Serial and Video	USB (2 Front, 2 Rear, 1 Internal), 1 Serial and Video
Remote Management	iDRAC9 Enterprise	iDRAC9 Enterprise	iDRAC9 Enterprise
Support	3 Years Dell ProSupport 4 Hours ProSupport Mission Critical On-site	3 Years Dell ProSupport 4 Hours ProSupport Mission Critical On-site	3 Years Dell ProSupport 4 Hours ProSupport Mission Critical On-site

***Please consult Siemens Healthineers for IT requirements needed to support Aptio Automation solutions that connect more than 30 analyzers.

Aptio Automation Environmental Specifications

Transport and storage environment

Temperature

Range: -20 to 60°C (-4 to 140°F)

Humidity

Range: 5-90%

Altitude

Up to 12,000 m above sea level

Operating environment

Room temperature

Range: 5-40°C (41-104°F)

Relative humidity

Maximum: 80% for temperatures up to 31°C (88°F)

Average thermal output

The average thermal output is calculated when the final configuration is determined.

Altitude

Up to 2000 m above sea level

Installation

Aptio Automation installation is managed by a Siemens Healthineers project manager and installation team. The team determines the specific system requirements based on the laboratory needs. The final configuration is fully tested to ensure functionality.

Preventive maintenance frequency

There are four Siemens Healthineers preventive maintenance visits per year for Aptio Automation; multiple pieces of equipment can be serviced during each visit.

Electrical requirements

Aptio Automation, including its modules, has a single dedicated power connection. This connection must be hardwired with a main disconnect device convenient to the system. Each analyzer connected to Aptio Automation requires a separate power supply; refer to each analyzer's specifications for power requirements.

Current/operating power requirements

Main Line Requirements		Value
Frequency		50/60 Hz
Voltage Fluctuations		Up to ±10%
Main Line Voltages	System Size	VA
Single Phase 230 V Nominal	Small	3680
Single Phase 230 V Nominal	Medium	9200
Three Phase 400 V Nominal	Large	3N-27600

Compressed air

Aptio Automation requires an external source of compressed air. The flow rate requirement is calculated based on the final configuration. A shutoff valve and pressure gauge must be installed near Aptio Automation.

Code compliance

Electromechanical safety

The system meets the code compliance requirements of the standards listed in this section. It is marked for electromechanical safety compliance in North America and the European Union as follows:

- IEC 61010-1 (Edition 2)
- UL 61010-1 (Edition 2)
- IEC 61010-2-051 (Edition 2)
- IEC 61010-2-081 (Edition 1; A1:2003)
- IEC 61010-2-101 (Edition 1)
- CSA C22.2 No. 61010-1-04
- CSA C22.2 No. 61010-2-051-04
- CSA C22.2 No. 61010-2-081-04
- CSA C22.2 No. 61010-2-101-04

Electromagnetic compatibility (EMC)

The system complies with the emission and immunity requirements of IEC 55011:2007 + A2:2007 for Group 1 Class A products.

Intentional radiator

The system contains a radio frequency identification system for tracking sample carriers, which is an intentional radiator. The system has been tested, meets the requirements, and is licensed according

to the requirements of Part 15 of the U.S. Federal Communication Commission (FCC) regulations. The system has been tested and meets the applicable requirements of EST:EN 300 330.2 V1.5.1 (2010-02) and ESTi:EN 301 489 3 V1.6.1 (2013-08).

Laser radiation

Some modules contain Class 1 and Class 2 laser devices. Modules containing laser devices meet the requirements of IEC 60825-1 and U.S. Food and Drug Administration regulations 21 CFR 1040. Opaque barriers prevent Class 2 laser radiation from leaving the system. The system is appropriately labeled and includes the following warning in required areas: Do not stare into beam.

Acceptable tube types

The following is a list of the most common tube types compatible with Aptio Automation. Please consult Siemens Healthineers for a complete list of compatible tube types:

- VACUETTE, Greiner Bio-One:
13 x 100, 16 x 100, 13 x 75
- VACUTAINER HEMOGARD Tube Closure, BD (Becton, Dickinson and Company):
13 x 100, 16 x 100, 13 x 75
- S-MONOVETTE, Sarstedt:
13 x 100, 13 x 75, 16 x 100, 16 x 75
- VENOSAFE, Terumo:
13 x 100, 16 x 100, 13 x 75
- VACUTEST KIMA:
13 x 100, 16 x 100, 13 x 75

(Nominal measurements D x H, mm)

At Siemens Healthineers, our purpose is to enable healthcare providers to increase value by empowering them on their journey toward expanding precision medicine, transforming care delivery, and improving patient experience, all made possible by digitalizing healthcare.

An estimated 5 million patients globally benefit every day from our innovative technologies and services in the areas of diagnostic and therapeutic imaging, laboratory diagnostics, and molecular medicine, as well as digital health and enterprise services.

We are a leading medical technology company with over 120 years of experience and 18,000 patents globally. Through the dedication of more than 50,000 colleagues in 75 countries, we will continue to innovate and shape the future of healthcare.

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Product availability may vary from country to country and is subject to varying regulatory requirements. Please contact your local representative for availability.

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